



PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Art Unit: 3753)
Examiner: John K. Ford)
Appellant: Yuichi Shirota, et al.)
Serial No.: 09/531,531)
Filed: 03/21/2000)
For: Automotive Air Conditioner)
Atty. Docket: 4041J-000452/COD)

REPLY BRIEF

Appeal No. _____

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APPELLANTS' REPLY BRIEF

Dear Sir:

This Reply Brief is in response to the Examiner's Answer, Paper 25, that was mailed April 22, 2004. The paragraph numbers noted below correspond to the paragraph numbers listed in the Examiner's Answer.

Paragraph 4 – Applicants believe that this appeal is timely and not premature pursuant to 37 CFR § 1.191(a). The Examiner cites MPEP Chapter 2000 and his interpretation of Rule 56. Applicants have indeed kept the USPTO apprised of the ongoing prosecution overseas. The IDS referred to by the Examiner (Paper No. 22) which cited two new references from a September 23, 2003 German Office Action was filed on November 3, 2003. Considering the fact that this German Office Action was initially sent to a German Associate who then forwarded it to the Japanese Associate responsible for the foreign filing for DENSO, a Japanese company, and then this Japanese Associate forwarded the Office Action with translation to our office, the filing of this IDS was indeed timely (well within the three month requirement) and the fact that the Notice of Appeal

noted

was filed on October 13, 2003 has no bearing on the timeliness of filing this IDS. Applicant has not gone through the time and expense of translating the German claims since the German claims have no bearing on the patentability of the U.S. claims. It is the prior art and its application to the U.S. claims that should concern the Examiner and Applicants have continuously filed IDS's on a timely basis citing the prior art from foreign sister applications.

Paragraph 5 – Apparently, the Examiner is of the opinion that every element of Claims 6 and 40 must be mentioned in the Summary of the Invention. Thus, below is a Summary which should satisfy the Examiner.

Referring to Figures 1-3, the present invention is directed to an air conditioner 2 for a vehicle. The air conditioner 2 comprises a case forming an air passage. A blower 14 blows the air in the case into the passenger compartment of the vehicle. A cooling heat exchanger 21 is disposed approximately horizontally in the case to define a lower space underneath the cooling heat exchanger 21. The cooling heat exchanger 21 includes a plurality of tubes and a plurality of corrugated fins and the cooling heat exchanger is slightly inclined relative to a horizontal surface at an inclination angle. A heating heat exchanger 22 is disposed in the case approximately horizontally at a position above the cooling heat exchanger. A mode switching member 23 selectively switches the flow direction of the conditioned air. The blower 14 is offset from the cooling heat exchanger 21 to a side of the cooling heat exchanger, to blow air into the space underneath the cooling heat exchanger 21. The bottom surface of the cooling heat exchanger has a tilted upper end and a tilted lower end. The case defines an air introduction port through which the blower 14 blows air into the space underneath the cooling heat exchanger. The air introduction port has a top end which is positioned above (higher than) the lower end of the cooling heat exchanger and a bottom end which is positioned under the upper end of the cooling heat exchanger in the vertical direction.

This construction causes the blown air to flow along the bottom surface of the cooling heat exchanger 21 to promote and improve the flow of condensation which occurs on the cooling heat

exchanger. Thus, the condensate flows down towards the lower end of the cooling heat exchanger due to gravity and due to the flow of air coming from the blower 14.

Regarding the Examiner's statement that the orientation of the tube is not claimed, the Examiner is correct. Applicants are not required to claim every single element of the invention. Regarding the Examiner's statement that it is only with the tube oriented in the direction of tilt that the improved drainage is possible, Applicants believe the Examiner is mistaken and Applicants are unaware of how or what basis was used by the Examiner in reaching this conclusion. Figure 7B illustrates a tube/fin heat exchanger. If the air is blown left to right in Figure 7B the fluid on the bottom surfaces would be pushed down the tubes 21f. If the air is blown up and down in Figure 7B the fluid on the bottom surfaces would be pushed down a fin 21g then across a tube 21f and so on until it reached the end of the surface. Thus, both orientations of the heat exchanger would experience improved condensate flow and Applicants are not required to claim a specific orientation unless it is required for patentability which in this application it is not.

Finally, the tilted upper end, tilted lower end, top end and bottom end are clearly defined because the claim refers to the vertical direction with the air introduction port having a top end and a bottom end in the vertical direction. Referring to Figure 2 and supplemented by Figure 20 if necessary, the cooling heat exchanger 21 is at an inclination angle (as claimed) or tilted such that the cooling heat exchanger 21 has a tilted upper end (left side) and a tilted lower end (right side). The top end (in the vertical direction) of the air introduction port is positioned above the tilted lower end (right side) of the cooling heat exchanger 21 and the bottom end (in the vertical direction) of the air introduction port is positioned under the tilted upper end (left side) of the cooling heat exchanger in the vertical direction.

Applicants believe that the features of the present invention are clearly claimed and ask the Board to adopt the correct and clear claim terminology used and not the interpretation relied upon by the Examiner. The reference numerals added to Figure 2 on June 25, 2001 provide support for Applicant's terminology but the wording isn't exactly the same as now claimed because these

drawing numbers were added to support different claim language that was proposed in 2001. If necessary, the drawings and specification can easily be amended to specifically define the claim terminology now being used.

Paragraph 9 – Response to Argument

Applicants have reviewed the background of the invention presented in the arguments of the Brief and Applicants are unable to find where the arrangement of the tubes promotes drainage. The Examiner is apparently adding his own interpretation and discussion to that presented by Applicants. It is because the cooling heat exchanger is tilted and because of the air flow along the bottom surface that the drainage is improved. As discussed above, either orientation will experience improved drainage. Applicants do not believe they are required to define one orientation since it has no bearing on patentability as shown by Claim 9 which defines the orientation of the tubes and which was also rejected by the Examiner.

JP 5-3365

The Examiner's argument with regards to a corrugated fin/tube air conditioner is not understood. JP 5-3365 clearly does not disclose this and the Examiner's position is that since a majority of cars are of a tube/corrugated fin then JP 5-3365 must also be of that design. He then found Nagao which has corrugated fins and tubes and then decided that JP 5-3365 could be a fin/tube construction. Applicants submit that whether or not JP 5-3365 is a fin/tube design has little to do with the Examiner's rejection. JP 5-3365 suffers from the lack of disclosure, teaching or suggestion discussed below.

The Examiner attempts to define the location and orientation are based upon hindsight reasoning after reviewing Applicants' disclosure. On page 7 of the Final Rejection (Paper No. 19), the Examiner has drawn the horizontal line and clearly both the upper end and the lower end of the air introduction port are located below the cooling air conditioner 6. He even states that the top of

the air introduction port is slightly below the evaporator 6. What the Examiner is apparently missing is that the claim defines the top end of the air introduction port as being above the lower end of the cooling heat exchanger. The Examiner then realizes this lack of disclosure and modifies the prior art to position the air introduction port at a position that meets the claims. He states his motivation is a reduction in height of the unit. Without having Applicants' disclosure in front of him, it would not have been obvious to reduce the height of the cited reference. There is no teaching in JP 5-3365 which supports the Examiner's position. The case law supporting Applicants' position is contained in Applicants' Brief.

Regarding the issue of replacing element 13 of JP 5-3365 with the mode control doors of JA '049 to distribute air to vent, foot and defrost outlets to improve occupant comfort, the Examiner is again relying on Applicants' disclosure. After reviewing the figures (specifically Figure 1) of JP 5-3365, it does not appear that this is an automotive air conditioner for a vehicle and thus there is no motivation to provide vent, foot and defrost outlets.

JA 6-156049

The Examiner's reasoning of JA 6-156049 is completely without merit. In his Reply Brief he states "The claimed lower space is clearly shown between blower 30 and the bottom of evaporator 28." Claim 6 states "an air introduction port from which air blown by said blower is introduced into said lower space" (emphasis added). The Examiner then defines the top end of the air introduction port as being located at the upper left end of evaporator 28. (Page 5 of Final Rejection). This point defined by the Examiner is the top end of the lower space and not the top end of the air introduction port. The top end of the air introduction port is the V-shaped point just to the left of reference numeral 30 because this is where the air is introduced into the lower space which the Examiner agrees is between blower 30 and evaporator 28. The air introduction ports defined by the Examiner on Page 5 of the Final Office Action eliminate any lower space between the blower and the evaporator and thus, the Examiner's position is clearly without merit.

JP 5-3365 (continued)

Applicants have reviewed the figures of 63-17107 and can only identify Figure 2 which clearly illustrates the vertical positioning of the evaporator 14. Applicants' Figure 7A does indeed show a large range of possibilities. But, as shown in Figure 7A, when the angle θ is small the retained water is reduced to about 200g. As you approach 45° tilt, the amount of retained water significantly increases. Figure 1B also shows a large number of tested angles but only substantially horizontal angles show optimum performance and provide the support for Applicants' claims.

Applicants' argument regarding the fact that JP '107 is not interested in reducing the height of the unit has as much support and possibly more than the Examiner's argument for reducing its height. The measurements made by the Examiner between the floor and the dashboard of his vehicles is clearly irrelevant. As clearly shown in JP '107, the air conditioner in JP '107 is not used near the dashboard, it is used in the sidewall of the passenger compartment. The Examiner is clearly utilizing Applicants' disclosure as a road map to modify the various pieces of prior art and, as stated in our Brief, this is clearly unacceptable.

Regarding JP '388, the figures clearly show a more vertical than horizontal positioning of the evaporator 100. Also, Applicants believe the arguments made regarding drainage is indeed commensurate with Claim 6.

Regarding Claim 40, the Examiner is now stating that the same elements of Claims 6 and 40 provide for the rejection of Claim 40. The problem with this is that Claim 40 does differ from Claim 6 and the Examiner has never discussed the elements of Claim 40 that are the same as Claim 6 and clearly has not discussed the elements that are different.

Finally in his Post Script, the Examiner states that Applicants seek very broad coverage and he even alleges that Applicants have avoided a reexamination/reissue of the parent application. Applicants are pursuing claim coverage that we believe we are entitled to and it is well

within the USPTO procedures and policies to accept narrow claims while continuing to prosecute broader claims.

CONCLUSION

Applicants respectfully submit that the Examiner has not shown that the various combinations of the references presents a prima facie case of obviousness as the references do not teach the elements of the claimed invention, much less suggest the combination of the references. In fact, the references lack several features of the claimed invention and would not anticipate nor render the invention obvious to those skilled in the art.

Regarding Claim 40, none of the references were defined as meeting the limitations of Claim 40.

Applicant's invention provides the art with a unique construction that reduces packaging size and improves drainage which is neither suggested or disclosed by the prior art. Accordingly, reversal of the final rejection of Claims 6, 7, 9, 11, 12, 15-20, 22, 23, 40-42 is respectfully requested.

Respectfully submitted,

Dated: June 7, 2004

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